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Laboratory Services

Ms Department of Health

March 2006 Revision

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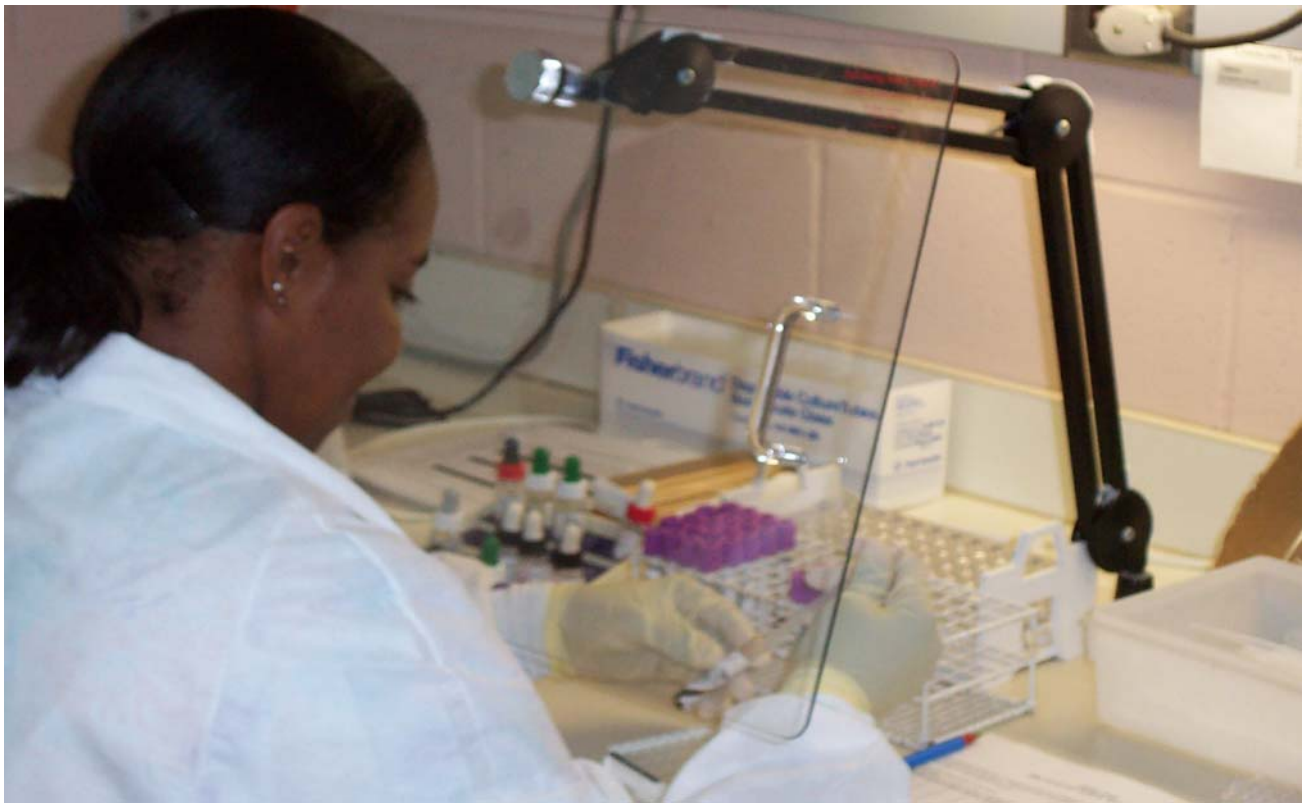

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Laboratory Organization

Mills McNeill, MD, PhD
Laboratory Director

Jim Horne, MPH, CIH
Laboratory Manager

Administration
- Medical Records
- Laboratory Information Systems
- Shipping and Receiving
- Business Office

Clinical Services
- Tuberculosis
- Immunology
- Special Microbiology
- STD/Mycology
- Chemistry/Hematology
- Molecular Diagnostics

Environmental Services
- Environmental Chemistry
- Environmental Microbiology
- Blood Lead Screening

Mailing Address:
Mississippi Public Health Laboratory
P.O. Box 1700
Jackson, MS 39215-1700

Shipping Address:
Mississippi Public Health Laboratory
570 E. Woodrow Wilson Drive
Jackson, MS 39216

Telephone: 601-576-7582
FAX: 601-576-7720
After Hours and Holidays: 601-576-7400

Local law enforcement officials are the point of contact for environmental samples, i.e. powder. Hospital laboratories wishing to refer isolates of possible BT agents or clinical specimens from victims of possible chemical terrorism agents should contact:

Office of Epidemiology at 601-576-7725 (after-hours at 601-576-7400)
Office of Emergency Preparedness and Response at 601-576-7366 (after-hours at 601-506-5658).

Complaints or suggestions for quality improvement can be made by phone directly to the Quality Assurance Officer or in written format addressed to the attention of the Quality Assurance Officer. The QA Office also monitors email suggestions and complaints submitted to Lab Quality@msdh.state.ms.us.

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INTRODUCTION

The Mississippi Public Health Laboratory is an organizational unit of the Mississippi Department of Health. Clinical laboratory services are available to other Department of Health units, county health departments, independent laboratories, private physicians, hospitals and clinics. A licensed physician or nurse practitioner must make all requests for clinical tests. Reports cannot be made directly to patients.

Environmental services are available to other Department of Health units, county health departments, and sources approved by the Department of Health. Certain clinical and environmental tests are limited to the Department of Health and county health departments. Some tests are limited to patients in specific health department programs. Other tests are on a fee basis for non-health department sources. Although routine diagnostic testing in all areas cannot be provided outside the health department system, private physicians, hospitals, and laboratories are encouraged to contact us in special cases.

When medically indicated, rabies testing of animals is available to all Mississippi residents at no cost. (See Appendix C for complete information.)

The Public Health Laboratory is licensed under the Clinical Laboratory Improvement Act (CLIA) and is approved by Medicare and Medicaid for all clinical tests offered. The PHL participates in the College of American Pathologists, Wisconsin State Lab of Hygiene, and American Association of Bioanalysts proficiency testing programs. The PHL participates in the Environmental Protection Agency (EPA) Drinking Water Certification Program, the Centers for Disease Control (CDC) Water Fluoridation Proficiency Testing Program and the Chemical Terrorism Biomonitoring Program, as well as the Food and Drug Administration (FDA) program for milk and food bacteriology. In addition, the PHL has in place an extensive internal quality assessment program.

The Public Health Laboratory has been pro-active in terrorism preparedness since 1999. The laboratory has trained response teams for chemical and biological agent testing. The laboratory is a member of the Laboratory Response Network (LRN). The LRN is a national affiliation of laboratories prepared to identify agents that could be used in terrorism activities. The laboratory is a designated Level II chemical agent response laboratory and a Level B/C biological agent reference laboratory. The laboratory has rapid response molecular testing capabilities to aid law enforcement in identifying specimens that may pose a threat to the people of our state.

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General Specimen Requirements

Patient information on the specimen and the request form must match exactly for testing to proceed. Use specimen containers specified and collection techniques provided by this manual. Collection devices and containers must be within the expiration date given by the manufacturer. Samples submitted in leaking containers cannot be tested.

Please note that some laboratory procedures require the approval of the Epidemiology Office or other agency program offices. A representative may be reached Monday through Friday 8am to 5pm at 601-576-7725 or 601-576-7400 on nights and weekends.

Reporting

For questions concerning specimen reports, please contact the Medical Records Office at 601-576-7582.

Lab Operation Schedule

Operating hours for the laboratory are from 8:00 am to 5:00 pm, Monday through Friday. The Public Health Laboratory follows Department of Health policy for holiday operation. Please consider this when submitting time-limited specimens, such as milk and water, during holiday periods.

Clinical Test Listing A-Z
A

Amoebic Trophozoites **Form 402**

For patients with severe, prolonged diarrhea. Stool should be collected in PVA bottle which can be obtained from the lab. Please contact the lab for collection bottle and instructions. Ship according to current shipping guidelines in Appendix E.

Anaerobic Culture **Form 402**

Submit pure culture in thioglycolate broth or anaerobic transport medium. Follow current IATA and DOT shipping regulations. **See Appendix E**.

Antibody Screen, Antibody ID and Titer **Form 402**
(Health department maternity patients only)

Collect 5 mL blood in a lavender top tube. If ordered with Rh testing, a separate blood tube in addition to the Rh tube, will be required. Submit following diagnostic specimen shipping regulations. If screening test is positive, the antibody is identified. Titers are performed on all antibodies that are considered significant because they cross the placenta. Consult program recommendations for further information and instructions.

Arbovirus Screening **Form 8021**
(includes West Nile and St Louis Encephalitis Virus antibodies)

Testing may be done on serum or CSF or both. Serum is the specimen of choice. Antibody levels in CSF tend to be lower. Serum samples should be collected at least 7 days post onset of symptoms. Samples testing negative and collected sooner will be reported with an interpretation of "result inconclusive, sample too acute". Request must include travel history, date of onset and date of collection. Travel history is mandatory for determining which antigens to test. All samples must be accompanied by a completed MDH Form # 8021. CSF samples may be stored at 2-8 degrees C. (in the refrigerator) for indefinite periods in tightly capped glass or polypropylene tubes. Do not store in polystyrene. Some CSF collection kits have polystyrene containers. If CSF is collected into polystyrene, aliquot into glass or polypropylene for storage and shipping. Do not freeze. Ship cold, if possible. Serum should be collected in tubes with gel separator. Samples should be spun down if shipping will be delayed more than one day. Free hemoglobin causes false positive test results. All samples with visible hemolysis will be rejected. Once serum has been separated from red cells, it may stored at 2-8 degrees for indefinite periods. Do not store in polystyrene. Do not freeze. Ship cold, if possible. Follow current regulations for shipping diagnostic specimens.

AST: see Chemistry Panel

ALT: see Chemistry Panel

B

Bioterrorism Agents

Polymerase Chain Reaction (PCR) and Time-Resolved Fluorescence (TRF) methods are available for clinical specimens or isolates to rule out Bioterrorism agents. The Public Health Laboratory Director will make the final determination regarding the testing of all such specimens.
See Appendix F

Bilirubin,total: see Chemistry Panel

Botulism **Form 402**
(available as referral to CDC)

Do not send specimens without first contacting lab and epidemiology. Specimens will be accepted only after consultation with appropriate personnel at CDC.

***Brucella* species by Real Time PCR** **Form 402**

At least 200µl of whole blood should be collected with EDTA anticoagulant. Specimens should be stored at 2-8°C and shipped on cold packs within 24 hours.

BUN: see Chemistry Panel

C

***Campylobacter*: see Enteric Culture**

CD4 (Lymphocyte Immunophenotyping T-Cell) **Form 402**
(Health departments only)

Allow a lavender top tube to completely fill. The manufacturer adds the correct amount of anticoagulant for the tube size. If the tube is allowed to completely fill, the correct blood to anticoagulant ratio will be achieved. Invert gently several times. Label tube with name, date, and time of collection. Do not refrigerate. Specimens must be received by the lab within 24 hours of collection. Reference ranges are included in patient report. Do not draw on Friday. Ship according to current regulations for diagnostic specimens. Results are sent to STD/HIV Program Office, only.

Chemistry Panel **Form 405**
(Health departments only)

Submit at least 3 mL serum in properly collected and centrifuged gel-separator tube without an anticoagulant. Avoid hemolysis; it renders many tests unsatisfactory. Lipemia interferes with many tests. Ship according to current regulations for clinical (diagnostic) specimens. The report will include reference ranges. Severely abnormal levels that may constitute a medical emergency will be reported by phone and fax. Please order only those tests necessary for your patient. Federal guidelines for Medicare/Medicaid patients state that claims for unnecessary tests may be subject to civil penalties. Please help our lab avoid this by ordering only tests with relevant diagnosis codes. Order each test individually on Form # 405. Provide patient diagnosis code(s) and name of ordering physician.
Tests available: Sodium , Chloride Potassium, Glucose, BUN, Creatinine, Uric Acid, AST (SGOT), ALT (SGPT), Total Bilirubin, Total Cholesterol, HDL Cholesterol, Triglycerides

Cholesterol, total and HDL: see Chemistry Panel

Chlamydia / Gonorrhea by NAAT Nucleic Acid Amplification Test **Form 984**
(Health Departments only)

Place one specimen per biohazard bag with unfolded form in the pocket of the biohazard bag; then ship to the lab following current diagnostic specimen regulations.
Do not submit specimens for children under 12 that do not receive Family Planning or Maternity Services. Do not submit specimens for medico-legal cases.
See Appendix I.

Chloride: see Chemistry Panel

Cholera and Non-Cholera *Vibrio* **Form 402**

Submit stool specimen in enteric culture bottle available from lab. Isolates also accepted. Follow current shipping guidelines in Appendix E.

Complete Blood Count , CBC **Form 403**
(Health departments only)

Allow a lavender top tube to completely fill. The manufacturer adds the correct amount of anticoagulant for the tube size. If the tube is allowed to completely fill, the correct blood to anticoagulant ratio will be achieved. Invert gently several times. Specimens must be received by the laboratory within 24 hours of collection. Follow current diagnostic shipping regulations. Reference ranges are included in patient report. Severely abnormal values that may constitute a medical emergency will be reported by phone and fax.

Core Antibody: see Hepatitis B Core Antibody

Creatinine: see Chemistry Panel

Cryptosporidium, Cyclospora,* and *Microsporidium **Form 402**

Exams for these are done on special request. Please contact the lab before sending. Stool specimens should be collected in bottle containing 10% formalin. These bottles are obtained from the lab. Ship according to current shipping guidelines in Appendix E.

Cultures (eye, ear, superficial wound, other sites) **Form 402**

Collect using Culturette or equivalent. Strep mailer is unsatisfactory. For isolates, follow current IATA and DOT shipping regulations. **See Appendix E**. Call lab before submitting unusual isolates. Culturettes may be shipped according to current shipping guidelines in Appendix E

Cyclospora* see *Cryptosporidium

D

Diphtheria Culture **Form 402**

Specimens should be obtained from the nose and throat and any skin lesion using a sterile swab. The swab should be submitted to the lab in silica gel pack. Please notify lab specimen is being collected. Follow current IATA and DOT shipping regulations. **See Appendix E**.

E

***E. Coli* O157: see Enteric Culture** or **Isolates-Confirmation and Grouping**

Enteric culture-*Salmonella*/*Shigella*/*Campylobacter*/*E. Coli* O157 **Form 402**

Collect stool specimen in large clean container, bedpan, or on clean paper. Add and emulsify about one half to one teaspoon of stool to enteric culture bottle using scoop attached to inside cap. This bottle contains Cary-Blair transport medium and is available from lab. ($1 each to non-health department sources). Do not overfill the bottle. Fill to the fill line. Must be received within 96 hours of collection. Follow current IATA and DOT shipping regulations. **See Appendix E**.

F

Flu: see Influenza

Food Poisoning **Form 402**

Specimens for the testing of bacterial or viral food poisoning are limited to outbreaks and must be submitted through local health departments. Contact General Environmental Services Food Protection Division at 601-576-7689 or Epidemiology at 601-576-7725. (after hours 601-576-7400) before submitting. Collect at least 25 grams of each suspect food in sterile containers. Ship on ice in blue milk mailer. Provide symptoms and time of onset. Raw foods that are ordinarily cooked before eating are not routinely accepted.

Chemical or Toxin

The analysis of food samples for chemical or toxin tests and the identification of foreign materials are directed by the General Environmental Services Food Protection Division (601-576-7689) in coordination with Epidemiology (601-576-7725. After hours 601-576-7400). Food samples for chemical or toxin tests or the identification of foreign materials are not

accepted by the Public Health Lab.

Agents of Bioterrorism in Food
Suspected agents of bioterrorism (including ricin or Staph enterotoxin B) in food samples may be submitted to the Public Health Lab with prior approval by the General Environmental Services Food Protection Division. They may be contacted at 601-576-7689 or after hours at 601-576-7400.

FTA: see TP-PA, Syphilis Confirmatory testing

Fungus identification: see Mycology

G

Gonorrhea Culture **Form 455**

Media ($1 per plate of prepared media to non-health department sources) must be stored in refrigerator and used before the expiration date. Collect specimen from the site of infection (cervix, urethra, rectum, throat, eye, etc.) and streak swab onto medium. Open one foil wrapped CO_2 tablet and place in the well on the edge of plate. Place inoculated plate in the polyethylene bag provided with medium side up. Seal the bag by pressing down on the zipper. Place the bag in a biohazard bag and place the unfolded white copy of form 455 in the pocket of the biohazard bag. Use one plate of media and one request slip for each collection site. Please indicate the collection site on the culture plate and request slip. The cultures should be incubated at 35°C for 24 hours to 72 hours. Throat specimens or other urogenital specimens must be indicated as such on form. Please call the lab for instructions before sending child abuse or legal cases. Package cultures according to current DOT and IATA shipping regulations. **See Appendix E. See Appendix D for incubation instructions.**

Gonorrhea by NAAT: see Chlamydia/ Gonorrhea by NAAT

Glucose see Routine Chemistry Panel **Form 406**
(Health departments only**)**

If glucose is ordered as one of several chemistry tests, it should be ordered on Form # 405 and run from the same serum-separator tube as the other chemistries. If glucose is ordered as a single test or part of a tolerance test, use a serum separator tube and Form # 406.

Glycated Hemoglobin, GHb/A1c **Form 406**
(Health departments only)

Collect 5 mL blood in a lavender top tube. Use Form # 406 and check GHb/A1c box. Ship according to current regulations for diagnostic specimens. Reference ranges are included in patient report.

H

HCG, quantitative, serum (Pregnancy Testing) **Form 402**
(Health departments only)

Submit 5 mL whole blood in a red top tube. Expected ranges are included in patient report. Ship following current diagnostic specimen regulations.

Hemoglobin A1c : see Glycated Hemoglobin

Hemoglobin Confirmation of Newborn Screening **Form 402**

Collect specimens following instructions from Genetic Screening Program. Submit in lavender top microtainer type tube. Attach Genetic Screening label as well as PIMS label. Follow current diagnostic shipping regulations. Results are sent to the Genetics Program Office.

Hemoglobin Electrophoresis (Sickle Cell Screening) **Form 402**
(Fee of $2.50 to non-health department sources.)

Prior arrangements for billing must be made. This test is for adults and children over six months old. It is not for newborn screening. If previous results are available, it is not necessary to repeat this test. Submit dried blood spot about the size of a dime on blotter paper strip available from the lab, or submit a minimum of 1 mL to 2 mL blood in a lavender top tube.

Hepatitis A Antibody (HAV Ab, HAVAB) **Form 402**
(Epidemiology only)

For use in outbreak investigations with special permission from the Epidemiology Office. Results are reported directly to Epidemiology. Collect at least 8.0 mL whole blood in serum separator tube. Use diagnostic specimen shipping regulations. Samples are initially tested for Hepatitis A total antibodies with reflex testing for IgM class antibodies if indicated.

Hepatitis B Core Antibody (HBC Ab, Core Ab, CORAB) **Form 499**
(Health departments only)

For contacts to positive maternity patients and employees who have not been immunized at the time of hire. Submit at least 8.0 mL whole blood in serum separator tube, following diagnostic specimen shipping regulations. Samples are initially tested for Hepatitis B Core total antibodies with reflex testing for IgM class antibodies if indicated

Hepatitis B Surface Antigen (HAA, HBSAG, AA) **Form 499**
(Health departments only)

Submit at least 8.0 mL whole blood in serum separator tube. Fill out request form completely. Follow diagnostic specimen shipping regulations. A hepatitis profile consisting of Hepatitis B Core Antibody and Hepatitis B Core IgM Antibody is run on all first time positive patients. Reflex testing for confirmation using antibody neutralization methods performed if indicated.

Hepatitis B Surface Antibody (HBSAB, AUSAB) **Form 499**
(Health departments and employee immune status evaluation only)

Submit at least 8.0 mL whole blood in serum separator tube. Fill out request form completely. Vaccination status information is required for all samples. Follow diagnostic specimen shipping regulations.

Hepatitis C Antibody (HCV) **Form 402**
(Health department employees following occupational exposure)

For use only in employee occupational exposure cases or with special permission from the Epidemiology Office. Submit at least 8.0 mL whole blood in serum separator tube following diagnostic specimen shipping regulations. Reflex confirmatory testing sent to CDC if indicated.

Human Immunodeficiency Virus 1 Antibodies (HIV-1) **Form 364/ 363**

Collect at least 8.0 mL whole blood in serum separator tube. Do NOT centrifuge. Form must be completely filled out and accompany specimen. Place in biohazard bag; then ship in sturdy container following guidelines for diagnostic specimens. Antibody testing is not recommended for children under 18 months of age. The testing sequence may take several weeks. A positive test does not necessarily indicate active infection; false positive tests can occur. For initially reactive patients, a repeat specimen is indicated. This assay is for HIV-1 antibody, and can be non-reactive in early infections. Reflex **Western Blot** testing is performed on all samples demonstrating HIV-1 antibody reactivity. An indeterminate result by Western Blot indicates testing should be repeated after a minimum of four weeks. For specific recommendations and questions concerning patient management, consult HIV/STD Program Manual. Contact lab for technical questions concerning testing.

Important:

For HIV Rapid Test confirmatory testing, mark Rapid Test Positive on request form. HIV-1 antibodies by EIA may be below detectable levels in Rapid Test positive patients with early infection. Western Blot testing is indicated.

No patient information or results can be given by the laboratory. Contact HIV/STD Program office at 601-576-7723.

I

Influenza A and B by RT-PCR **Form 402**
(Sentinel physicians only**)**

Nasopharyngeal or oropharyngeal samples should be collected only on swabs with a Dacron® tip and a plastic shaft and be transported in viral transport media (M4). Swabs with calcium alginate or cotton tips and wooden shafts are **NOT** acceptable. Specimens should be immediately refrigerated at 2-8 degrees C and shipped on ice packs.

Influenza Culture **Form 402**
(Sentinel physicians or by special arrangements with laboratory)

Nasopharyngeal or oropharyngeal samples should be collected only on swabs with a Dacron® tip and a plastic shaft and be transported in viral transport media (M4). Swabs with calcium alginate or cotton tips and wooden shafts are **NOT** acceptable. Specimens should be immediately refrigerated at 2-8 degrees C and shipped on ice packs.

Isolates -Confirmation and Grouping **Form 402**

Salmonella, *Shigella*, *E. Coli:*O157, *N.meningitides* Submit on solid medium (without sugars) in screwcap tube. Follow current IATA and DOT shipping regulations. **See Appendix E**.

L

Lymphocyte Immunophenotyping T-Cell: see CD4

Lead Screening, blood **Form 462**
All blood collection supplies have been pre-screened at the PHL for use in the collection of samples for this study. Do not use collection supplies that have **not** been provided by the PHL**.** Ship as diagnostic specimen at room temperature. **See Appendix H for complete collection instructions.**

M

Malaria, Blood Parasites **Form 402**

Please notify lab before sending. Thick and thin blood smears are accepted. It is also recommended that an EDTA tube of blood (lavender top) be submitted.

Measles IgG Antibody **Form 402**
(Health departments only)

Submit 7-10 mL whole blood in red top tube. Follow diagnostic specimen shipping regulations.

Microsporidium: see Cryptosporidium

***Mycobacteria,* NTM: see TB**

Mycology **Form 402**

Submit isolates or inoculated media only. Do not send clinical specimens since fungal agents survive poorly in body fluids and should be processed immediately. Health department clinics should call the Mycology lab at 601-576-7582 for special instructions to submit a specimen for fungus culture. Follow current IATA and DOT shipping regulations. **See Appendix E**.

N

***N. Meningitis*: see Isolates-Confirmation and Grouping**

Norovirus by RT-PCR **Form 402**
(previously known as Norwalk-Like Virus)

Submit stool or vomitus sample (at least 10mL) in a sterile container with no preservatives or media and a screw cap lid (i.e. sterile urine cup.) Stool samples collected at 24 - 48 hours after onset of symptoms are ideal. Stool samples submitted in Cary Blair transport media are acceptable. After collection, specimens should be immediately refrigerated at 2-8° C, and shipped on ice packs within 24 hours.

O

OCP (Ova, Cysts and Parasites) **Form 402**
($1 per bottle fee to non-health department sources.)

Collect stool specimen in clean container or on clean paper. Add about one half to one teaspoon of stool to parasite bottle containing 10% formalin fixative and emulsify. Do not fill above the fill line. Place specimen in biohazard bag and ship according to current shipping guidelines in Appendix E.

P

Parasites, Blood: see Malaria

***Pertussis* (Whooping Cough) Culture** **Form 402**

Call lab for instructions. Transport media and calginate swabs must be obtained from lab.

***Pertussis* by Real Time PCR** **Form 402**

Submit a dry nasopharyngeal swab (Dacron® tip with plastic shaft) in a sterile 15mL conical tube without transport media. Swabs with calcium alginate or cotton tips and wooden shafts are **NOT** acceptable. Specimen should be immediately refrigerated at 2°-8° C and shipped on ice packs within 24 hours.

Pinworm **Form 402**

Use clear (not Magic brand) cellulose tape. Use only enough tape to cover top of slide. Do not wrap tape around slide. Using tongue depressor or equivalent, touch sticky side of tape strip to perianal region. Stick tape to clean microscope slide. Place in protective mailer or cardboard to prevent breakage. Place slip and slide in a white envelope labeled "Pinworm Exam". Ship according to current shipping guidelines in Appendix E. Do not mail in same package as pap smears.

Potassium: see Chemistry Panel

Pregnancy Testing : see HCG, quantitative

R

Rabies **Form 433**

Rabies testing is offered at no cost, **see Appendix C.**

Routine Chemistry : see Chemistry Panel

Rh Type **Form 402**
(Health department maternity patients only)

Collect 5 mL blood in a lavender top tube. Ship according to current regulations for diagnostic specimens. If previous results are available, repeat testing is not indicated.

RPR (Syphilis screening test) **Form 450**

Submit 5 mL whole blood in red top tube. Plasma is unacceptable. Ship following current diagnostic specimen regulations. All reactive reports will include a titer. A confirmatory test for syphilis is performed on all reactive RPR's. Note that serologic tests for syphilis become reactive four to six weeks after infection or one to three weeks after appearance of the chancre. Tests performed before this time may be nonreactive.

Rubella IgG Antibody **Form 402**
(Health departments only)

Submit 7-10 mL whole blood in red top tube. Follow diagnostic specimen shipping regulations. If previous testing indicates immunity, repeat testing is not indicated.

S

***Salmonella*: see Enteric Culture** or **Isolates-Confirmation and Grouping**

***Shigella*: see Enteric Culture** or **Isolates-Confirmation and Grouping**

Sickle Cell screening: see Hemoglobin Electrophoresis

Sodium: see Chemistry Panel

St Louis Encephalitis Virus Antibodies : see Arbovirus Screening

***Streptococci*: see Throat Culture for Group A, Vaginal/ Rectal Culture for Group B**

Syphilis Serology : see RPR, TP-PA, FTA

T

Throat Culture (Group A *Streptococci*) **Form 402**

Kits are available from lab ($5 each to non-health department sources). Collect specimen with swab provided, place in silica gel packet, place in foil envelope, and ship according to current shipping guidelines in Appendix E. Only specimens in Strep Mailer Kits will be accepted.

TP-PA and/or FTA (Syphilis Confirmatory testing) **Form 402**

Submit 5 mL whole blood in red top tube. Ship following diagnostic specimen regulations. These tests are not useful or indicated if patient has a previous history of syphilis. If a patient has a nonreactive RPR, but is experiencing physical symptoms suggesting late syphilis (ocular, cardiovascular, or neurological), call the lab for special arrangements.

Triglycerides: see Chemistry Panel

Tuberculosis (TB) and Other *Mycobacteria* **Form 416**

Sterile, leak-proof specimen containers are available upon request for specimens requiring acid-fast stain and culture. Follow current shipping regulations for diagnostic specimens. Acid-fast staining is performed on the day the specimen is received. Isolation and ID may require up to 6 weeks. If *M. haemophilum* or *M. genavense* is suspected, please contact the TB Lab when specimen is sent.

- Sputum, Bronchial Washings, and Tracheal Aspirates - Submit five to ten mL in TB specimen container (available from lab). Refrigerate specimen if transportation is delayed more than one day.
- Gastric Lavage - Collect five to ten mL in a sterile container and add 100 mg of sodium carbonate within four hours of collection.
- Urine - Collect 40 mL in a sterile container. Refrigerate specimen until ready to transport.
- Body Fluids - Blood or bone marrow specimens are no longer accepted. Positive cultures containing acid-fast bacilli that have been isolated from blood or bone marrow specimens by hospital clients may still be submitted for identification of the isolated organism.
- Stool - Collect in a sterile, wax-free container, since wax may cause a false positive AFB smear.
- Body Fluids (CSF, Pleural, Peritoneal, Pericardial, etc) - Collect ten to 15 mL in a sterile container.
- Tissues (Lymph node, skin, other biopsy material) - Collect 1 gram of tissue in a sterile container. Do not immerse in saline or other fluid or wrap in gauze. Tissues in formalin are not acceptable.

- Abscess Contents, Aspirated Fluid, Skin Lesions, Wounds - If possible, send fluid in a sterile container. If volume is insufficient, send swab in transport medium (Amies or Stuart's); however, swabs are not recommended for the recovery of mycobacteria.

Referred Isolate For Identification

Submit pure culture of Mycobacteria on Lowenstein Jensen (LJ) slant or other appropriate medium. Ship according to current shipping regulations in Appendix E. Use Form # 416. State site from which isolation was made and date of collection.

Drug Susceptibility

Primary drug susceptibilities are automatically done on the first isolate of *M. tuberculosis* from a new patient and repeated at two month intervals as long as patient remains culture positive.

Direct Probe for M. tuberculosis (MTD)

The MTD is automatically done on smear positive respiratory specimens from new patients, but is performed on smear negative specimens by request only. The MTD test is approved only for respiratory specimens (sputum, tracheal aspirates, and bronchial specimens). The MTD is approved only for patients who are suspected of having pulmonary TB based on clinical evaluation and who have received no antituberculosis therapy, less than seven days of such therapy, or have not received such therapy in the last 12 months. A negative MTD test does not exclude the possibility of isolating *M. tuberculosis* complex on culture. The MTD test must be performed and evaluated in conjunction with mycobacterial culture. Inhibitory substances or contamination present in some specimens may prevent amplification and cause unreliable test results.

Processed sediment (concentrates)for MTD:

The MTD test is designed to detect rRNA of members of the *M. tuberculosis* complex using respiratory sediments (sputum, tracheal aspirates, and bronchial specimens) prepared from generally accepted current adaptations of the NALC-NaOH or NaOH decontamination protocols described by the CDC using 1% to 1.5% NaOH for 15 to 20 minutes and centrifugation at ~ 3,000 x g^8. Resuspension fluids other than phosphate buffer (67mM) or bovine albumin should not be used. Final specimen concentrations of NaOH other than 1 to 1.5% should not be used for processing specimens to be tested. Sediments prepared using Alpha-Tec Systems - NAC-PAC ™ XPR-plus™ A.F.B. processing buffer have been shown to interfere with amplification. If a processed sediment is submitted for MTD, a culture will also be set up at that time. Please do not submit a positive culture from this same concentrate since this causes duplication of work on the exact same specimen. If there is insufficient sample volume to set up a culture or if the culture is contaminated, the TB lab will contact the Microbiology Lab of the hospital facility to obtain the culture set up by your facility.

Processed Sediment Storage for MTD

Sediments may be stored at 2 to 8 degrees C for up to 3 days prior to testing.

Communication

Results from all **new** cases identified as smear positives, direct probe (MTD) positives, and M. tuberculosis complex identification positive are phoned and faxed to the submitting facility. Do not call the TB Lab for patient results. Please call the TB Lab to make us aware of any problematic cases or for an explanation of laboratory procedures.

U

Uric Acid: see Chemistry Panel

V

Vaginal/Rectal Culture for Group B *Streptococci* **Form 402**
(Health department maternity patients)

Use Stuart Medium Transport Swabs available from Central Supply. Ship to lab according to current shipping guidelines in Appendix E.

Varicella-Zoster IgG Antibody **Form 402**
(Health departments only)

Submit 7-10 mL whole blood in red top tube. Follow diagnostic specimen shipping regulations.

Varicella-Zoster Virus (VZV) by RT-PCR **Form 402**

Vesicular swabs (polyester with plastic shaft), scabs from crusted lesions. The preferred method is to ship swab or scabs in a sterile container without transport medium at room temperature.

***Vibrio:* see Cholera**

W

Western Blot: see HIV-1 Antibody

West Nile Virus Antibodies: see Arbovirus Screening

Whooping Cough: see Pertussis

Environmental Services

Autoclave Sterility Check **Form 402**
(Health departments,Colpo clinics, and State certified water laboratories only)

Submit test ampules that have been treated in the following manner: Store in refrigerator at 2° C to 8° C before use. Do not freeze. Do not use past expiration date. Retain Certificate of Analysis. Label one ampule "test" and place in a basket or other container with a maximum registering thermometer (MRT). Autoclave with a full load at 121° C for 15 minutes. Record MRT value. Use caution when handling ampule after sterilization. Contents are hot and under pressure. Allow to cool 15 minutes before removing from basket. Label an ampule that has not been autoclaved as "control". Wrap both "test" and "control" ampules carefully in packing material, place the ampules inside a zip-lock biohazard bag and place the form 402 in the outside pocket of the bag for shipping. Ship the same day as tested in a 2" X 6" unlined mailer (available from the lab). Label mailer, " Attention: Environmental Microbiology." Ship Monday through Wednesday only.

Drinking Water Microbiology

Presence of Total Coliforms and *E. coli* **Form 425 Routine**
(contact Water Supply Program before submission) **Form 426 Resample**
Form 427 Monitoring

Submit sample in sterile four ounce bottle containing sodium thiosulfate (available from lab). Do not rinse bottle. Fill to 100 mL line or above. Care should be taken to use the appropriate form and to include all information requested on the form. Samples will be rejected should any information be incomplete. Wrap request form around the bottle and secure with a rubber band. Samples received in the laboratory that exceeds 30 hrs will be rejected. Samples may be shipped in cardboard water boxes available from the laboratory. For status of regulated supplies or remedial actions for unsatisfactory samples, contact Water Supply Program at 601-576-7518. Samples from public water supplies will not be accepted from individuals. Contact Water Supply Program at 601-576-7518 to register complaints.

Boxes available from the Lab for shipping water samples.

- 2 sample water box 4 5/16 X 3 5/8 X 2 1/8
- 6 sample water box 6 ¾ X 4 ¼ X 5
- 12 sample water box 4 ½ X 8 ¼

Fecal Coliform (A-1 Medium Test) **Form 410**

A-1 medium test is applicable to test source water, sea water, and treated wastewater. Submit sample in sterile four ounce bottle containing sodium thiosulfate (available from the lab). Do not rinse bottle. Fill to 100 mL line or above. Samples may be shipped to the lab in blue polyfoam shipper (available at local health department) on ice or walked in. Samples are to be tested within 30 hours and maintained at 10˚C or below until analysis.

Bottled Water **Form 411**

Note: Monitoring samples must be submitted by an environmentalist.

Bottled water samples will be analyzed using Colilert or Quanti-tray for Total Coliforms and by Heterotrophic Plate Count for Total Bacteria. Submit sample in sterile four ounce bottle containing sodium thiosulfate (available from the lab) or retail container. Be sure to include all information requested on the form. Samples shipped to the laboratory for presence-absence must be received within 30 hours and 24 hours for heterotrophic plate count. Presence-absence samples may be shipped in cardboard boxes available from the health department. Heterotrophic plate count samples are to be maintained at 4˚C or below and may be shipped on ice in a blue polyfoam shipper available from the laboratory. The Bottled Water Program is monitored and regulated by the Office of Environmental Health.

Environmental Chemistry

Drinking Water Chemistry

Fees are charged for the analysis of drinking water from non-health department sources for the aforementioned categories of testing. Contact the laboratory for information concerning the charges.

The Safe Drinking Water Act establishes primary drinking water regulations and other regulations applicable to public water systems. The Water Supply Program oversees monitoring schedules and data handling. Analyte categories include: Trace Metals, Inorganics, Insecticides, Carbamates, Herbicides, Polychlorinated Biphenyls, PAH's, Adipate/Phthalates, Miscellaneous SOC's, Trihalomethanes, Haloacetics, TOCs, Bromates and Volatile Organic Compounds. For questions involving sampling, containers, request forms, and shipping instructions, contact the laboratory or Water Supply Division.

Drinking Water Fluoridated Supplies Monitoring **Form 428**
(Regulated Supplies Only, contact Water Supply)

Collect in four ounce microbiology water sample bottle available from lab. Rinse out bottle with water to be sampled. Fill to within one half inch of top.

Routine Drinking Water Physical/Chemical-Partial Analyses **Form 415**
(Contact Water Supply)

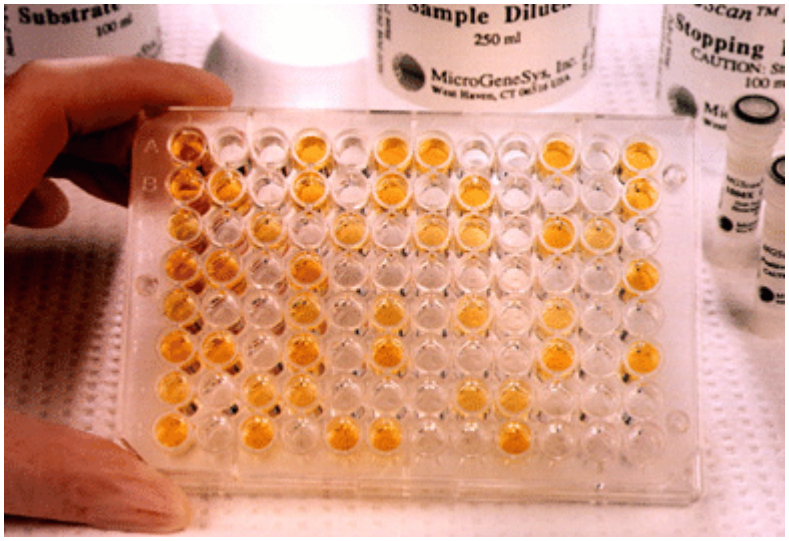
Collect at least one pint of water directly from the well into a clean glass or plastic container after pumping at least 20 minutes. Do not collect from pressure tank or house faucet. Rinse container thoroughly with sample water before filling. Use Physical/Chemical Water Analysis Form. Tests include pH, alkalinity, chloride, free carbon dioxide, iron, hardness and manganese.
Samples should be submitted to the laboratory within 24 hours of collection to ensure the reliability of the test results.

Routine Drinking Water Physical/Chemical-Complete Analyses **Form 415**
(contact Water Supply)

Collect as for Partial, but submit at least one half gallon of water. Tests include Partial Analyses plus color, sulfate, fluoride, magnesium, calcium, sodium, potassium, and total dissolved residue.
Samples should be submitted to the laboratory within 24 hours of collection to ensure the reliability of the test results.

Drinking Water Lead and Copper **Form no EC001**
(Fee for non-health department sources)

Contact lab for special collection container and mailer. Include a check payable to the Public Health Laboratory for $20 for **each** sample to be tested. Collect sample and submit in mailer per instructions provided. If multiple samples are sent, number or identify each sample according to location, etc. After testing, lab will report results and interpretation by mail.



Milk Testing

Milk Testing **Form 431, Form 431**
(Health Departments Only)

Milk sampling schedules are arranged by the Environmental Microbiology Supervisor and the Milk Environmentalist. Routine milk samples are not accepted Friday through Sunday. Samples must be received within 48 hours after collection.

Raw Milk

Submit in plastic vial (available from lab) no more than three fourths full. Ship in blue polyfoam shipper supplied by lab. Place sample bags in a large plastic bag; close with large rubber band; place inside bag that lines shipper; add crushed ice to fill remaining space in shipper. Include temperature control. Complete Form # 431 and place between outer and inner lids of shipper.

Processed Milk and Dairy Products

Submit in retail container. Ship in blue polyfoam shipper using procedure described under Raw Milk. Temperature control must be at least one half the size of the largest container. Refer to Milk Program for further instructions, interpretation of results, and regulatory actions. Complete Form # 430 and place between outer and inner lids of shipper.

APPENDIX A

Supplies Available From Laboratory

(* Denotes Fee to Non-Health Department Sources)

*STREP COLLECTION KIT FOR THROAT CULTURE	REQUEST # NEEDED
Environmental Blood Lead	Request # Needed
Culturette for Group B Strep Screen	Central Supply
TB Sputum Container	Boxes of 24
*Enteric Culture Bottle	Request # Needed
*Parasite Bottle	Request # Needed
Sickle Cell Blotter Strips	Packages of 50
Sterile 4oz Water Bottle	Boxes of 12
*GC Culture Media	Boxes of 50 or Packs of 10
Gen-Probe Collection Kits	Request # Needed
*Lead and Copper Drinking Water Container	Request # Needed
Urine Transport Tubes	Central Supply
Blood Collection Tubes	Central Supply
Mailer 1 " x 5" (metal tube inside fiberboard tube)	Boxes of 24 or 48
Mailer 2" x 5" (metal tube inside fiberboard tube)	Boxes of 24 or 48
HIV Double Mailer	Request # Needed
Biohazard Specimen Bag (Absorbent included)	Packages of 50
Water Boxes: 1.water bottle box- 4 5/16 X 3 5/8 X 2 1/8 2.water bottle box- 6 ¾ X 4 ¼ X 5 3.water bottle box- 4 ½ X 8 ¼	 Accommodates 2 samples Accommodates 6 samples Accommodates 12 samples

FORMS AVAILABLE FROM LABORATORY

402	MISCELLANEOUS	PKG OF 200
403	CBC	Pad of 50
405	Clinical Chemistry	Pad of 50
406	Gluc/A1c (glycated hgb)	Pkg of 100
410	Surface Water (A-1)	Individually
411	Bottled Water	Individually
416	TB Culture	Pkg of 100
425	Water Bacteriology	Pkg of 100
426	Resample	Pkg of 100
427	Monitoring	Pkg of 100
428	Fluoride	Pkg of 50
430	Processed Milk	Individually

431	Raw Milk	Individually
433	Rabies	Individually
*450	RPR	Pkg of 200 or Individually
455	GC Culture (blue print)	Pkg of 100
462	Environmental Blood Lead	Request # Needed
477	Lab Mailing Label	Pkg of 100
499	Hepatitis B	Pkg of 50
363	HIV Jail Program/MDOC sites (green print)	Request # Needed
364	HIV (all other sites)	Request # Needed
984	Chlamydia/ GC by NAAT	Request # Needed
8021	Arbovirus Panel	Pkg of 25
EC001	Private Drinking Water Lead and Copper	Individually

APPENDIX B

Lab Fee Schedule for Non-Health Department Sources

GC CULTURE	$ 1.00	PER PLATE OF PREPARED MEDIA
Strep Collection Kit	$ 5.00	per kit
Sickle Cell Test	$ 2.50	per test
RPR	$ 1.00	per prepaid request slip
Enteric Culture Bottle	$ 1.00	each
Parasite Bottle	$ 1.00	each
Lead (In Water)	$10.00	per test
Fecal Coliform (A-1)	$ 7.00	per test
Total Coliform (MPN)	$10.00	per test
Total Coliform & E.coli (Presense-Absence Test)	$ 5.00	per test
Heterotrophic Plate Count	$ 4.00	per test
Coliform & Standard Plate Count(Caps)	$ 5.00	per test
Coliform & Standard Plate Count(Jugs)	$10.00	per test

Non-Health Department submitters will be billed for shipping.

APPENDIX C

Rabies Testing

Introduction

Rabies is a zoonosis with worldwide distribution. It is easily transmissible and almost uniformly fatal to humans. In keeping with our mission to protect the health of the people of Mississippi, the Public Health Laboratory offers free testing of potentially rabid animals that have had contact with humans or pets. Exposure to rabies is a serious medical concern. All suspect exposure requires consultation with the appropriate District Health Officer (or in his or her absence, the State Epidemiologist.) The testing of suspect animals without accompanying human or pet exposure is discouraged since laboratory capacity is limited.

Rabies testing is performed on specific brain tissues by a *Direct Fluorescent Antibody* method (DFA.). Brain tissue DFA testing requires sacrifice of the suspect animal. The head is removed intact and shipped cold, not frozen, for necropsy. Frozen samples must completely thaw before processing; this can delay testing up to 24 hours. In extenuating circumstances, and **with prior approval**, the Public Health Laboratory has facilities to remove the head and the entire carcass may be submitted. Larger animals should be killed or euthanized with brain tissues left intact. The head should be removed by a veterinarian. Bats should be submitted whole. The whole bat is needed so the species can be determined for surveillance purposes.

Rabies is transmissible through contact with body fluids. Extreme care should always be taken to minimize exposure by the use of personal protective equipment including, but not limited to, gloves, eye protection, and an impermeable lab coat or apron.

The animal submission should be prepared for shipping by placing in leak proof plastic bags that will be provided in the rabies shipper. Bags obtained from retail transactions are unacceptable. Bags should have a zipper type or covered wire closure. Care should be taken to ensure this seal is leak proof. Then this bagged specimen should be placed inside another leak proof bag. The use of "double bag" shipping preparation is to help prevent exposure of shipping and handling personnel, as well as receiving staff at the laboratory.

Double bagged submissions should then be placed in a designated rabies shipper. Add ice packs, not wet ice. A rabies request (form number 433) should be completely filled out. Incomplete or absent forms can cause testing to be denied or delayed. The laboratory should be notified by telephone before a sample is shipped. Call 601-576-7582 and ask for Special Microbiology. Information needed includes the health department facility or clinic shipping the sample with contact phone number, the shipper number, the species of animal, and exposure information including the name of the exposed person(s). This will allow the laboratory to track submissions and ensure that testing can proceed. Laboratory staff must document each phone call and verify that all submissions are received. Missing shipments require contact with the submitter, verification of sample disposition and full documentation of these activities by QA form QA001 with copies to the laboratory QA Office. A specimen received by the lab without prior phone notification will NOT be tested until the appropriate Health Officer (or in his or her absence, the State Epidemiologist) verifies approval.

Materials Supplied by the Laboratory (Call 601-576-7582 to request restocks.)
(1) Rabies shippers: These designated shippers are gray, Thermosafe brand chests. They are to be used only to ship animal carcasses and heads for rabies testing. NO OTHER LABORATORY SAMPLES OR SUBMISSIONS ARE ALLOWED IN THESE SHIPPERS. These shippers are numbered and assigned to health department locations. Use of any other shipper for rabies testing requires documented permission from the laboratory.
(2) Disposable packing supplies: Each rabies shipper should contain a disposable lab coat, two Ziploc type bags, and a checklist for packing.
(3) Rabies request forms: These forms are supplied using the standard procedure for laboratory requisitions. Ask for form number 433.

Materials Required But Not Supplied by the Laboratory
(1) Disposable latex or plastic gloves
(2) Frozen cold packs. These may be obtained commercially or prepared by filling disposable plastic bottles with water and freezing. Every effort will be made by the laboratory to return commercial cold packs to the submitting health department location, but several should be kept on hand for multiple shipments and lost cold packs. It usually takes at least 24 hours for packs to freeze.
(3) Eye protection

The Environmentalist is responsible for the following:
NOTE: In absence of Environmentalist, clerical staff will:
(1) Assure that adequate supplies for shipping animals are on hand at all times.
(2) Assure that the District Health Officer; or District Epidemiology Nurse; or District Environmental Health Supervisor, **AND** the Laboratory have been notified.
(3) Assure that specimens are properly prepared for shipping (see "Prepare Specimen for Shipping," below.)

General Guidelines for Testing Animals for Rabies
(1) If the animal is a dog, cat, ferret, bat or wild carnivore (for example, a skunk, raccoon, fox, bobcat, or coyote) AND a known or possible human exposure has occurred (for example, a bite, scratch, or other potential exposure to the animal's saliva), the submitting clinic should immediately pack the specimen in a rabies shipper according to the instructions below and send it to the Public Health Laboratory via the earliest available courier run.
(2) The submitting clinic should notify the Special Microbiology staff (601-576-7582) that the specimen is en route. The after hours, weekend, and holiday telephone number is 1-601-826-5483 or pager 1-877-400-9804.
(3) The submitting clinic should immediately notify the District Health Officer or his or her designee (for example, the District Chief Nurse, the District Environmentalist, or other) of the potential rabies exposure incident to permit appropriate and timely patient management. In some instances, animal control measures also may be required if, for example, a pet has been exposed to a potentially rabid animal.
(4) If there is no reported human or pet exposure or if the animal is one of the following species that are not normally considered to be reservoirs of the rabies virus, consult with the District Health Officer or his or her designee prior to shipping the specimen if there is adequate time to

do so before the next courier pick-up. As back-up, the Epidemiology and Special Microbiology staff will be happy to provide consultation as needed. Species of animals in this low-risk category include:

A. squirrel or chipmunk	D. opossum	G. woodchuck or beaver
B. hamster, guinea pig, or gerbil	E. rat or mouse	H. other (such as domestic
C. mole	F. rabbit or hare	livestock)

(5) If in doubt, it is always better to ship a specimen that may not ultimately require rabies testing than to cause a possible delay in patient management by not shipping the specimen. A final decision can always be made AFTER the specimen arrives at the Public Health Laboratory in consultation with the District Health Officer. In such instances, it is recommended that the local health department staff inform the requestor that the final decision regarding testing may have to be made after the specimen arrives at the laboratory.

(6) Assess the disposition of animal:

- Live animals must be euthanized or killed by a veterinarian preserving brain anatomy if at all possible.
- Animal heads should be removed by a veterinarian.
- Bats should always be shipped whole without removal of the head.

(7) Complete the laboratory rabies test requisition form number 433; get complete name, address, and phone numbers of client. Record the name, address, and telephone number of the exposed person if different from submitter.

(8) Complete a dated log sheet for tracking purposes, including Shipping Box number and name of district level consultant and full identification of client and indicate call to Lab.

NOTE: The decision to provide rabies testing outside of normal hours of operation will be made only by the Laboratory Director or his designee in consultation with the District Health Officer.

Prepare Specimen for Shipping

(1) Don personal protective equipment, including gloves, lab coat, and eye protection. Double gloving is recommended.

(2) Place specimen in leak proof plastic bag.

(3) Place bagged specimen in second leak proof plastic bag.

(4) Place double bagged specimen in rabies shipper. Place only one specimen per shipper. Place cold packs between outer specimen bag and shipper. **DO NOT USE ICE.**

(5) Place rabies requisition form in the pocket inside the lid of the shipper. Samples will not be tested until this form is received. Care should be taken to ensure it arrives with the specimen.

(6) Securely close shipper. Make sure shipping label shows Public Health Laboratory.

(7) Place shipper with other totes and shippers for courier pick up.

The laboratory is responsible for the following:

(1) Check in each specimen by comparing with call log.

(2) Call for verification of samples received without phone notification. Document failures and send a copy of this information to the QA Office.

(3) Call for verification of samples called in but not received. Document failures and send a copy of this information to the QA Office.

(4) Lab results will be returned to the submitting clinic.

(5) The submitting clinic will immediately notify the district health officer or his or her designee by telephone of all rabies test results, both positive and negative.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APPENDIX D

GC Culture Collection and Incubation

Each morning, check and record the incubator temperature. If it exceeds 37°C, lower it. The ideal temperature for *Neisseria gonorrhoeae* to grow is 35°C. Each day of use, remove an adequate amount of media from the refrigerator. Check the expiration date. Do not use expired media. Allow media to reach room temperature before using, usually 30 minutes. Reseal unused media in bags and return the unused portion to the refrigerator.

For females, a cervical specimen is preferred. The speculum may be moistened with warm water, but do not use any other lubricant. Remove cervical mucus, then insert a sterile swab into the endocervical canal and move the swab from side to side, allowing several seconds for absorption. If a vaginal specimen is necessary, use a speculum to obtain the specimen from the posterior vaginal vault or obtain it from the vaginal orifice if the hymen is intact.

For males, use a sterile swab to collect a urethral specimen or exudate.

As soon as the swab is taken, streak it over the surface of the medium in a Z pattern, rolling the swab so that all parts contact the medium. Cross-streak the plate with the same swab to spread the inoculum. Be careful not to break the medium surface; but if the surface is broken, do not discard. Write the patient's name and date on the medium side of the plate. Open one foil wrapped CO_2 and place the tablet in the well on the edge of plate. Place inoculated plate in the polyethylene bag provided with the medium side up. Seal the bag by pressing down on the zipper. Place the bag in a biohazard bag and place the unfolded white copy of the GC lab slip (form #455) in the pocket of the biohazard bag. Incubate cultures 24 hours not to exceed 72 hours at 35°C. After incubation, remove cultures from incubator, pack and ship to the lab according to the current shipping regulations for diagnostic specimens. Cultures must be incubated at least 24 hours, preferably 48 hours. Specimens collected on Thursday should be incubated for 24 hours and shipped Friday. Specimens collected on Friday should be incubated until Monday morning and shipped to the lab on Monday evening. Please call the lab if you have any questions.

APPENDIX E

Basic Shipping Guidelines

The following shipping guidelines are not intended to be used in lieu of training or to be inclusive of all shipping regulations, but should be used in conjunction with training. Before submitting specimens, be certain your shipping containers and labeling meet the current regulations. The **shipper** is responsible for safe transport, and severe penalties are prescribed for failure to meet the guidelines. Submitters outside the health department system should contact their carrier for possible additional requirements. Health departments should contact the Public Health Laboratory with questions regarding transport of specimens to the Public Health Laboratory. Many laboratory tests require additional or more specific instructions, which may be found under the test to be performed.

Shipping Guidelines for Mississippi County Health Departments Using the State Contract Courier Service (Ground Transportation)

DOT - The Department of Transportation (DOT) regulates the interstate transportation by surface or air of infectious substances and diagnostic specimens in the United States. See www.dot.gov or http://hazmat.dot.gov/ for the latest rules and regulations concerning shipping.
Diagnostic Specimens – "any human or animal material, including excreta, secreta, blood and its components, tissue, and tissue fluids being transported for diagnostic or investigational purposes..."
Exception to DOT shipping regulations: A diagnostic specimen or biological product when transported by a private or contract carrier in a motor vehicle used exclusively to transport diagnostic specimens or biological products.

Packaging Diagnostic Specimens for Transport by Contract Courier Service

1. Specimen containers must be leak-proof for liquid specimens and sift-proof for solid specimens. Screw caps may be secured with Parafilm®. The maximum quantity for an individual specimen container is 500 mL or 500 g.

2. Place each specimen container, i.e. blood tube, in a zip-lock biohazard bag. **One specimen per bag!**

3. If the specimen is liquid, place adequate absorbent material inside the bag to absorb all of the contents in the event of a spill. (Most biohazard bags provided by the MSDH Public Health Laboratory contain a sheet of absorbent that is sufficient to absorb at least 50 mL.)

4. **Zip** the bag so that the zip lock bag is a leak-proof secondary container.

5. Place the lab slip (unfolded, facing outward) in the pocket of the bag.

6. After each specimen is placed in a separate biohazard bag, separate specimens by test, i.e. place RPRs in a larger zip lock bag.

7. Place all zip lock bags in a rigid transport box, meeting minimum testing requirements**. (**Each complete outer package must be capable of successfully passing a drop test of not less than 1.2 m (3.9 feet) and must be at least 100 mm (4 in) in the smallest overall external dimension.)

8. Specimens must be secured in the transport box with suitable cushioning material.

9. Secure the lid of the transport box.

10. The transport box should be labeled as "DIAGNOSTIC SPECIMENS". (The maximum net quantity is ≤ 4 L or ≤ 4 Kg for each transport box.)

11.0 Each person who packages a diagnostic specimen for transport must be familiar with the DOT regulations for the transport of diagnostic specimens. Certification of training is not required.

Dry Ice – Always place dry ice outside of the secondary packaging. Dry ice should never be placed inside the primary or secondary containers or any other air-tight container. If dry ice is used for a diagnostic specimen, the miscellaneous hazard label and the net quantity in Kg of the dry ice should be on the outside of the package.

Reference: 49 CFR Part 171 et. al. *Hazardous Materials: Revision to Standards for Infectious Substances; Final Rule*, Federal Register/Vol. 67, No. 157/Wednesday, August 14, 2002/Rules and Regulations.

Shipping Guidelines for the United States Postal Service (USPS)

USPS, regulations are found in the Domestic Mail Manual or at **http://pe.usps.gov**.

Shipping Guidelines for Carriers Using IATA Regulations (Air Transport)

Always refer to the most recent IATA regulations (www.IATA.org) printed annually. The International Air Transport Association (IATA) publishes the IATA *Dangerous Goods Regulations* in order "to provide procedures for the shipper and the operator by which articles and substances with hazardous properties can be safely transported by air on all commercial air transport."

Competent Authorities for United States (USA)

Regulatory Branch:

U.S. Dept. of Transportation
Office of Hazardous Materials Transportation
Research and Special Programs Administration
400 Seventh Street, S.W.
Washington, DC 20590
Tel: +1 (202) 366 0656
Fax: +1 (202) 366 3753

Enforcement Branch:

Federal Aviation Administration
Hazardous Materials Program
Office of Civil Aviation Security
800 Independence Avenue, S.W.
Washington, DC 20591
Tel: +1 (202) 267 3951
Fax: +1 (202) 267 8496

APPENDIX F

Guide to the Referral of Potential Agents of Bioterrorism

CDC has identified certain micro-organisms and toxins as having the potential to be used as agents of bioterrorism. They are: *Bacillus anthracis, Yersinia pestis, Francisella tularensis, Brucella* species, Burkholderia *pseudomallei, Burkholderia mallei, Coxiella burnetti, Variola* major (smallpox), botulinum toxin, ricin, and staphylococcus enterotoxin. CDC recognizes hospital laboratories as sentinel labs, and requests that these samples be referred to the Mississippi Public Health Laboratory for identification or analysis.

Shipping instructions for *B. anthracis, Y. pestis, F. tularensis, Brucella* species, botulinum toxin, ricin, and staph enterotoxin, *Burkholderia pseudomallei, Burkholderia mallei, Coxiella burnetti:* Package isolate according to current IATA and DOT guidelines, see Appendix E. The package may be taken to any county health department for courier delivery to the Mississippi Public Health Laboratory. **Call the Mississippi Public Health Lab (601-576-7582) during business hours (or after hours 601-576-7400) before collecting or submitting any specimen or isolate.**

Shipping instructions for potential smallpox patient specimens:

LOW to MODERATE RISK OF SMALLPOX - If the febrile rash illness is classified as low to moderate risk according to CDC guidelines, request a Varicella assay to be performed to rule out chickenpox. Package and label as a diagnostic specimen according to DOT and IATA guidelines. The package may be taken to any county health department for courier transport to the Mississippi Public Health Lab. **Call the Mississippi Public Health Lab and Epidemiology before collecting and shipping the specimen.**
HIGH RISK OF SMALLPOX – If the Febrile Rash Illness is classified as high risk of smallpox according to CDC guidelines, **immediately report to Epidemiology and the Mississippi Public Health Lab**. After their review, if smallpox is still suspected, the case will be reported to CDC. CDC must give approval before a potential smallpox patient clinical specimen is shipped to CDC's BSL4 lab in Atlanta. Specimens from patients with a high risk of smallpox should not be shipped to the Mississippi Public Health Lab.

Environmental Samples (Powders)

Hospital laboratories should not process environmental (non-clinical) samples received from a possible Bioterrorism event, especially powders. Individuals with environmental samples should contact their local law enforcement agency.

Mississippi Public Health Laboratory 601-576-7582
After hours call 601-576-7400
Additional information at www.cdc.gov

APPENDIX G

Guide to the Referral of Potential Agents of Chemical Warfare

CDC has identified certain chemicals as having the potential to be used as agents of chemical warfare. The list contains sixty-four potential chemical warfare agents. CDC requests that CLINICAL samples be referred to the Mississippi Public Health Laboratory for identification, analysis, or coordination of shipment to CDC.

The Mississippi Department of Health Laboratory will test clinical samples (blood and urine) for cyanide, heavy metals, and nerve agent metabolites.

Sentinel Labs should notify the Public Health Laboratory that specimens have been collected by contacting *Teri Snazelle*, Chemical Terrorism Coordinator, *1-877-400-9803.* Special packaging and shipping instructions will be provided to assist in maintaining the integrity of the clinical samples. The samples should be received at the Public Health Laboratory as quickly as possible once they have been properly labeled and packaged. Delivery of these samples should be coordinated with the Public Health Lab and shipped to:

Teri Snazelle
1-877-400-9803
Mississippi Department of Health
Public Health Laboratory
570 East Woodrow Wilson
Room U266
Jackson, MS 39216

Suspected Drinking Water Contamination

Individuals concerned of possible drinking water supply contamination should contact their local law enforcement agency. Local law enforcement should contact MEMA at 601-352-9100. MEMA will coordinate with Homeland Security and the Office of Emergency Response. OEPR coordinates with the Department of Health Water Supply Division and the Public Health Laboratory.

Mississippi Public Health Laboratory 601-576-7582
Office of Emergency Planning and Response (MDH) 601-576-7380
After hours call 601-506-5658
MEMA 601-352-9100

Appendix H

Capillary Blood Collection Instructions for Blood Lead Testing

Positioning the Pediatric Patient
The toddler or small child should be held on the lap of an adult. The arm should be held as if the patient were seated at a miniature phlebotomy chair with an arm board. This position improves and optimizes the blood pressure in the fingertip and venous perfusion. Positions with the arm very much higher or lower than described tend to reduce or even stop the pressure at the fingertip and blood flow will be affected.

PLEASE REMEMBER TO TAKE THE BLOOD LEAD SAMPLE FIRST, AND THEN USE THE REMAINING BLOOD FLOW TO SAMPLE FOR ANY ADDITIONAL TESTS.

1. Lay out all of the supplies needed for a single collection. Don a pair of disposable gloves that fit appropriately. Seat the ambulatory patient in a standard phlebotomy chair with an arm board. For an in-home visit, have an adult hold the child in their lap and extend the arm over a table. Older children may sit in a chair with the arm extended over a table. The arm should be held as if the patient were seated at a miniature phlebotomy chair with an arm board. This position improves and optimizes the blood pressure in the fingertip and venous perfusion. Positions with the arm very much higher or lower than described tend to reduce or even stop the pressure at the fingertip and blood flow will be affected. When possible, the torso of supine (lying down with face upward) patients should be raised slightly and /or the arm lowered to a position slightly below the level of the breastbone.

2. Gently massage the entire length of the finger to increase the temperature and improve perfusion (See Figure 3 of the collection poster).

3. Clean the incision site and surrounding area with 70% isopropyl alcohol. Thoroughly dry the site with the sterile gauze pad to prevent rapid hemolysis caused by residual alcohol. (Figure 4 of the collection poster)

4. Again, gently massage the lower portion of the finger while avoiding the fingertip incision site. Firmly grasp the lower portion of the finger to restrict return circulation. Firmly position the lancet device at the incision site (refer to site selection instructions above) and depress the trigger.

5. After triggering, immediately remove the device from the patient's finger. Using a sterile gauze pad, gently wipe away the first drop of blood. Apply gentle, continuous pressure to the finger avoiding excessive massaging as this may contaminate the sample or cause hemolysis.

6. While massaging the finger and after forming a good drop of blood, touch the tip of the capillary tube that is attached to the microtainer to the drop of blood. There should be no air bubbles in the capillary tube as it fills. The microtainer should be held in a horizontal position while filling to avoid introduction of air bubbles. The capillary tube is meant to hold only 200 ul of blood. After the blood reaches the end of the tube, hold the

microtainer in an upright position and gently tap the microtainer so that the blood is forced into the bottom container. Remove the capillary tube assembly and place the cap that is attached to the bottom of the microtainer body over the opening and tighten. Gently invert the blood so that it mixes well with the anticoagulant.

7. Following blood collection, gently press a dry sterile gauze pad to the incision site until bleeding stops. If indicated, apply a bandage to the finger.

8. Place labels on each of the microtainers to properly identify the patient. Place duplicate label on lab slip. Place microtainer in biohazard bag supplied by laboratory with request slip in outer pocket.

Appendix I

GENPROBE APTIMA COMBO 2 ASSAY COLLECTION PROCEDURE FOR GC AND CT TESTING

A. Purpose:

APTIMA Combo 2 Assay is a nucleic acid amplification probe (NAAT) test that detects and differentiate infection by *Chlamydia trachomatis* and/or *Neisseria gonorrhoeae* in endocervical and male urethral swab specimens, in vaginal swab specimens and in female and male urine specimens. The assay may be used to test specimens from symptomatic and asymptomatic individuals. Different collection and transport kits may be required for different collection sites.

NOTES:

Medico-legal specimens are not to be collected using this technology (NAAT) as they are not admissible in court.

Clients 12 years old or younger who are not currently enrolled in maternity of family planning programs are required to be assessed/consulted by physician prior to specimen collection.

B. Procedure

1. **Urine Specimen Collection**

Intended Use:

- Asymptomatic and symptomatic male clients requesting STD check up in clinic following clinical assessment by clinician or nurse.
- School base screening programs (men and women)Mobile clinic screening programs (men and women).
- Special clinics as defined by the Bureau of STD/HIV.

Materials Required:

Urine Specimen Collection Kit for urine specimens.

Specimen Collection:

The client should not have urinated for at least 1 hour prior to specimen collection. Female patients should not cleanse the labial area prior to providing the specimen. Instruct patient to provide a first-catch urine (approximately 20 mL to 30 mL or the initial urine stream) into a urine collection cup. **Collection of larger volumes of urine may result in specimen dilution that may reduce test sensitivity.**

Packaging, Transporting, and Storage of Urine Specimens

After collection, urine samples must be transferred to the urine specimen transport tube immediately and placed inside of a biohazard bag with the completed Form 984. Remove the cap from the urine transport tube and transfer 2 mL of urine into tube using a disposable pipette. The correct volume of urine has been added when the fluid level is between the black fill lines on the urine specimen transporter tube label. Re-cap the urine specimen transport tube tightly and place a label with the client identification information. All urine samples MUST be transported to the laboratory in the GEN-PROBE APTIMA URINE transport

tube. Transport and store the GEN-PROBE APTIMA URINE transport tube with the urine specimen at 2° to 30°C until tested.

2. Urethral or endocervical specimen collection

Intended Use:

- Asymptomatic and symptomatic male clients requesting STD check up in clinic following clinical assessment by clinician or nurse.
- Females presenting for STD Clinic with or without a history of contact to *Chlamydia trachomatis* or *Neisseria gonorrhea* infected partner.
- Asymptomatic and symptomatic women (if 29 years old or younger) undergoing pelvic examination for the Family Planning Program.
- Maternity patients regardless of age.

Materials Required:

Unisex Swab Specimen Collection Kit for Endocervical and Urethral Swab Specimen.

Specimen Collection:

a. Female endocervical swab specimens collection.

The vaginal swab is the preferred specimen collection method for female patients in MSDH clinics. However, endocervical swab specimens may be collected if the vaginal specimens kits are not available.

Endocervical swab specimen collection.

- Remove excess mucus from the cervical os and surrounding mucosa using the cleaning swab (white shaft swab in the package with red printing). Discard this swab.
- Insert the specimen collection swab (blue shaft swab in the package with green printing) into the endocervical canal.
- Gently rotate the swab clockwise for 10 to 30 seconds in the endocervical canal to ensue adequate sampling.
- Remove the cap from the swab specimen transport tube and immediately place the specimen collection swab into the transport tube
- Carefully break the swab shaft at the scoreline; use care to avoid splashing of the contents.
- Recap the swab specimen transport tube tightly and place a label with the client identification information.
- Place the swab specimen transport tube immediately inside of a biohazard bag with the completed Form 984.

b. Male Urethral swab specimens

- The client should not have urinated for at least one hour prior to specimen collection.
- Insert the specimen collection swab (blue shaft swab in the package with the green printing) 2 to 4 cm into the urethra.

- Gently rotate the swab clockwise for 2 or 3 seconds in the urethra to ensure adequate sampling.
- Withdraw the swab carefully.
- Remove the cap from the swab specimen transport tube and immediately place the specimen collection swab into the specimen transport tube.
- Carefully break the swab shaft at the scoreline; use care to avoid splashing of the contents.
- Recap the swab specimen transport tube tightly and place a label with the client identification information.

Packaging and Transporting, Male Urethral Specimens
Place the swab specimen transport tube immediately inside of a biohazard bag with the completed Form 984.

3. Vaginal Swab Specimens

This specimen may be collected by the clinician or the nurse. The client may be instructed to self collect the specimen while in the clinic if 16 years or older. The clinic nurse, nurse practitioner or physician must collect all vaginal swab specimens from clients younger than 16 years.

Intended Use:

- Females presenting for STD Clinic with history of contact to *Chlamydia trachomatis* or *Neisseria gonorrhea* infected partner.
- Asymptomatic and symptomatic women (if 29 years old or younger) undergoing pelvic examination for the Family Planning Program.
- Maternity patients regardless of age.

Materials Required
Vaginal Swab Specimen Collection Kit for vaginal specimens.

Client Collected Vaginal Swab:

The client will be instructed by the nurse and assisted if necessary to do the following:

Wash hands before beginning the collection of vaginal swab.

Use the swab from the clear plastic tube.

Twist the cap off the tube and place the cap on a clean surface.

Remove the swab from the tube and hold the plastic stick at the end.
Do not touch the foam part of the swab.

Hold the lips of the vagina open with one hand. Insert the swab fully into the vagina with your other hand.

Turn the swab against the walls of your vagina as you count slowly to ten.

 Withdraw the swab.

 Return the swab into the plastic tube, and replace the cap onto the tube.

 Wash hands after completion of the swab collection.

Give the container to the nurse.

The nurse will place a label with the client identification information on the container and put it immediately inside of a biohazard bag with the completed Form 984.

Packaging, Transporting, and Storage of Vaginal Swab Specimens
After collection, transport and store the swab in the swab specimen transport tube at 2° to 30°C until tested. Specimens must be assayed within 15 days of collection.

Appendix J
MISSISSIPPI PUBLIC HEALTH LABORATORY
QUICK REFERENCE FOR SPECIMEN COLLECTION

TEST	COLLECTION	SPECIMEN	PHL FORM NO.
Anaerobic Culture	Anaerobic Transport Tube	Exudate	402
Amoebic Trophozoites	Call Lab—PVA bottle	Stool	402
Arbovirus Serology	Red Top or SST Tube	Whole Blood or Serum	8021
Antibody Screen (Maternity)	Lavender Top Tube	Whole Blood	402
Bacterial Isolates (*Salmonella*, *Shigella*, *E. coli:O157*, *N. meningitidis*, and other isolates)	Isolation Media/Tube	Stool, isolate	402
Blood Parasites/Malaria	Call Lab—Blood smears & lavender top tube	Blood	402
Botulism	Call Lab	Stool, Serum	402
CBC with Platelets	Lavender Top Tube	Whole Blood	403
CD4 (T-Cell) Test	Lavender Top Tube	Whole Blood	402
Chlamydia/GC NAAT	Chlamydia Collection Kit	Urethra/vagina/urine	984
Cholera	Call Lab	Stool	402
Clinical Chemistry Tests	Serum Separator Tube	Serum	405
Cryptosporidium, *Cyclospora*, *Microsporidium*	Call Lab—parasite bottle	Stool	402
Culture, Miscellaneous	Culturette	As Indicated	402
Dairy Products	Retail Container	Milk	430
Diphtheria	Call Lab-StrepCollection Kit	Throat Swab	402
Drinking Water Bacteria	Sterile 4oz Bottle	Water	425/426/427
Enteric Culture	Enteric Culture Bottle	Stool	402
Food Poisoning Bacteria	Sterile Container	Food	402
Fungus, Systemic Isolates	Isolation Medium	Sputum, Body Fluids	402
Glucose Only	Serum Separator Tube	Serum	406
Gonorrhea Culture	GC Culture Media	Cervix/Urethra/ Throat/Rectum, etc	455
Group B Strep Vaginal/Rectal Culture	Stuart Medium Transport Swab	Vaginal/Rectal Swab	402
HCG, serum (Pregnancy test)	Red Top Tube	Whole Blood	402

TEST	COLLECTION	SPECIMEN	PHL FORM NO.
Hemoglobin Confirmation	Lavender Top Microtainer	Whole Blood	402
Hepatitis A Tests	Red Top or SST Tube	Whole Blood	402
Hepatitis B Tests	Red Top or SST Tube	Whole Blood	499
Hepatitis C Tests	Red Top or SST Tube	Whole Blood	402
HIV (AIDS)	Serum Separator Tube	Whole Blood	364
Influenza Culture	Viral transport medium	Throat or nasal swab	402
Influenza (PCR)	Dacron Swab w/ plastic shaft in Viral Transport Media	Nasopharyngeal or Oropharyngeal Swab (Ship on cold-packs)	402
Lead (In Water)	Call Lab	Water	Lead Form
Lead (Environmental Blood Lead)	Microvette Purple Top	Whole blood	462
Measles IgG Antibody	Red Top Tube	Whole Blood	402
Norovirus (PCR)	Sterile Specimen Cup w/ screw-cap lid	Stool or Vomitus (Ship on cold-packs)	402
Ova and Cysts (parasitology)	Parasite Bottle	Stool	402
Pinworm	Cellulose Tape Slide	Perianal Touch Prep	402
Rabies	Leakproof Plastic Bag	Animal Head	433
Raw Milk	Whirlpak Bag	Milk	431
Rh Type (Maternity)	Lavender Top Tube	Whole Blood	402
RPR/Syphilis confirmation	Red Top Tube	Whole Blood	450
Rubella IgG Antibody	Red Top Tube	Whole Blood	402
Sickle Cell Test	Blood On Filter Paper Or Lavender Top Tube	Whole Blood	402
TB Isolate	LJ Slant	Sputum, Etc.	416
TB (Raw Specimen)	TB Specimen Container	Sputum, Etc.	416
Throat Culture	Strep Collection Kit	Throat Swab	402
Urine Culture	Urine Transport Tube	Urine	402
Vaginal/Rectal Culture Group B Strep	Stuart Medium Transport Swab	Vaginal/Rectal Swab	402
Varicella IgG Antibody	Red Top Tube	Whole Blood	402
Whooping Cough	Call Lab—Transport media for culture is obtained from lab	Nasopharyngeal Swab	402
Whooping Cough (PCR)	Dacron Swab w/ plastic shaft in sterile tube; Sterile Specimen Cup w/ screw-cap lid	Nasal Swab; Nasal Wash (Ship nasal wash on cold-packs)	402

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